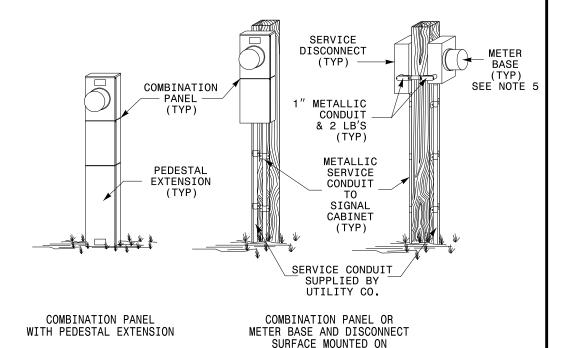
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SHEET 1 OF 2

GROUND MOUNTED SERVICE EQUIPMENT OPTIONS FOR UNDERGROUND ELECTRICAL SERVICE



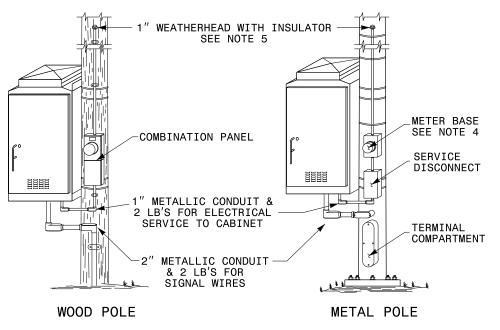
NOTES

1. LOCATE THE SERVICE EQUIPMENT NEAR THE SIGNAL CABINET IN A MANNER THAT WILL ALLOW EASY ACCESS TO THE SERVICE DISCONNECT. LOCATE SERVICE EQUIPMENT SO AS NOT TO OBSTRUCT SIGHT DISTANCE OF VEHICLES TURNING RIGHT ON RED.

6"X6" TREATED WOOD POST

- 2. FOR GROUND MOUNTED ELECTRICAL SERVICE INSTALLATIONS WHEN POST MOUNTING IS CHOSEN. INSTALL TREATED WOOD POSTS A MINIMUM OF 3 FEET INTO THE GROUND.
- 3. INSTALL ALL METER BASES MOUNTED IN PEDESTALS AT A HEIGHT NOT TO EXCEED 5 FEET AS MEASURED FROM THE CENTER OF THE METER. INSTALL ALL OTHER METER BASES AT A HEIGHT BETWEEN 4 FEET AND 5 FEET AS MEASURED FROM THE CENTER OF THE METER. SEAL ANY UNUSED MOUNTING HOLES ON COMBINATION PANELS, METER BASES AND SERVICE DISCONNECTS.
- 4. INSTALL OVERHEAD ELECTRICAL SERVICE ON POLES AS SHOWN WHEN UNDERGROUND SOURCE IS NOT AN OPTION. COMBINATION PANELS, OR METER BASES AND SERVICE DISCONNECTS, MAY BE INSTALLED ON POLÉS WHEN POLE MOUNTED SIGNAL CABINETS ARE REQUIRED FOR THE INSTALLATION. DO NOT ROUTE UNFUSED OVERHEAD ELECTRICAL SERVICE CONDUCTOR INSIDE OF METAL POLES.
- 5. TYPICAL POINT OF DELIVERY FOR UNDERGROUND SERVICE IS INSIDE OF METER BASE. TYPICAL POINT OF DELIVERY FOR OVERHEAD SERVICE IS AT THE WEATHERHEAD ENTRANCE AT THE TOP OF THE SERVICE RISER.

POLE MOUNTED SERVICE EQUIPMENT OPTIONS FOR OVERHEAD ELECTRICAL SERVICE



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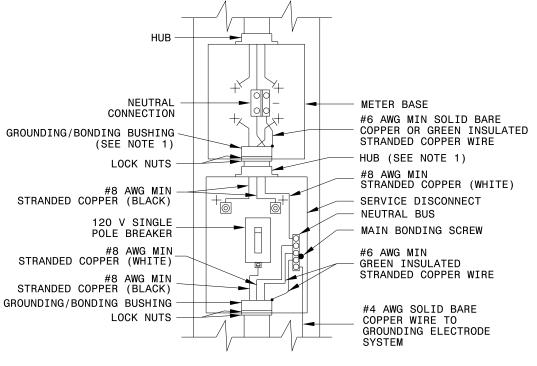
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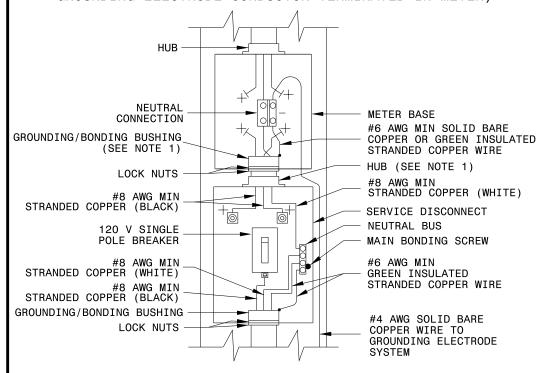
SHEET 2 OF 2

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TYPICAL ELECTRICAL CONNECTION DETAIL FOR OVERHEAD SERVICE INSTALLATION (SHOWN WITH METER BASE/SERVICE DISCONNECT OPTION AND WITH GROUNDING ELECTRODE CONDUCTOR TERMINATED IN DISCONNECT)



ALTERNATE ELECTRICAL CONNECTION DETAIL FOR OVERHEAD SERVICE INSTALLATION (SHOWN WITH METER BASE/SERVICE DISCONNECT OPTION AND WITH GROUNDING ELECTRODE CONDUCTOR TERMINATED IN METER)



NOTES

1. WHEN USING A HUB LISTED AS A GROUNDING HUB (UL TYPES DWTT AND KDER), THE BONDING BUSHING IN THE METER BASE IS NOT NECESSARY.

SHEET 2 OF 2

1-12 STATE OF
NORTH CAROLINA
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

OPTIONS

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VISION OF HIGHWAYS

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GROUNDING FOR

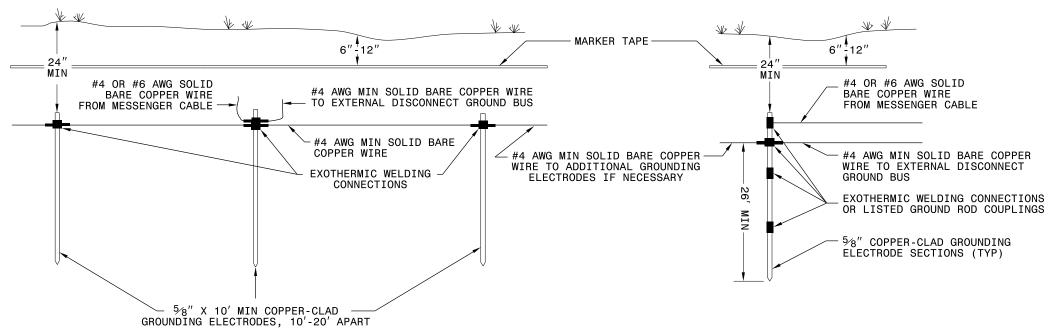
SHEET 1 OF 2

1700.02

Ш MULTIPLE AND SECTIONAL **LECTRODE**

MULTIPLE ELECTRODES

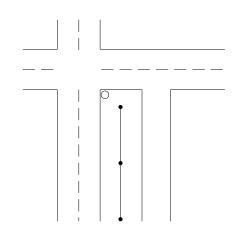
SECTIONAL ELECTRODES



UNRESTRICTED SHOULDER

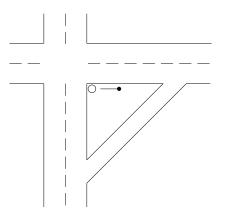
PLACE GROUNDING ELECTRODES AT 90°

LIMITED SHOULDER



PLACE GROUNDING ELECTRODES IN A STRAIGHT LINE

RESTRICTED SPACE



SHEET 1 OF 2

1700

NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

GROUNDING

SERVICE SECTIONAL

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ELECTRODES

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DEF STATE OF LILIA
NORTH CAROLINA
T. OF TRANSPORTATION
VISION OF HIGHWAYS RALEIGH, HUB MESSENGER CABLE GROUNDING CONNECTION CONDUCTOR TO POWER SYSTEM POLE GROUND NEUTRAL CONNECTION METER BASE 12 HUB LOCK NUT #8 AWG MIN #8 AWG MIN STRANDED COPPER (BLACK) STRANDED COPPER (WHITE) SERVICE DISCONNECT 120 V SINGLE **NEUTRAL BUS** POLE BREAKER MAIN BONDING SCREW #8 AWG MIN STRANDED COPPER (WHITE) #6 AWG MIN GREEN INSULATED Ш **LECTRICAL** #8 AWG MIN STRANDED COPPER (BLACK) STRANDED COPPER WIRE GROUNDING GROUNDING/BONDING BUSHING #4 AWG SOLID BARE COPPER WIRE TO GROUNDING ELECTRODE **ENGL** LOCK NUTS FOR JOINT USE POLES ONLY, #6 AWG MIN SOLID BARE COPPER SYSTEM WITH SPLIT BOLT CONNECTORS OR
PARALLEL GROOVE CLAMPS ON EACH END
(CONNECTION TO BE MADE ABOVE
SPECIAL ROUTING SHOWN BELOW) HSI AND **STANDARD** WIRE STAPLES, 24" SPACING ABOVE 8 FEET AND 12" SPACING BELOW 8 FEET ABOVE GROUND (TYP) BONDING **ERVICE** 24" MIN PROVIDE WIRING ROUTING AND STAPLING SO THAT STAPLES MAY BE TEMPORARILY REMOVED AND GROUNDING WIRES CAN BE PULLED MIN 1.5" OFF POLE & SPACED MAX 0.75" APART TO ENABLE TESTING OF GROUNDING ELECTRODE RESISTANCE BY CLAMP ON TESTER DRAWING **ELECTRICAL SERVICE** WOOD 10, GROUNDING TO CABINET FOR **POLES** 5/8" DIA COPPER CLAD STEEL GROUNDING ELECTRODES, WITH EXOTHERMIC WELDING CONNECTION

NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. GROUNDING POLES FOR WOOD SERVICE BONDING AND ELECTRICAL GROUNDING

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SHEET 2 OF 2

00.02

STANDARD DRAWING **ENGLISH**

SHEET 2 OF 2

STATE OF

NORTH CAROLINA
T. OF TRANSPORTATION
VISION OF HIGHWAYS -SPAN WIRE HANGER MESSENGER CABLE (SPANWIRE) WRAPPING TAPE OR LASHING WIRE (TYP)--TRAFFIC SIGNAL AND/OR INTERCONNECT CABLES BALANCE ADJUSTER **ENGLISH** SIGNAL CABLE VEHICULAR RED WIRE ENTRANCE FITTING SIGNAL HEAD SIGNAL STANDARD YELLOW SIGNAL **HEADS** GREEN DRAWING HEADS FOR CLOSURE CAP

SHEET 1 OF 2

FOR HEADS STANDARD DRAWING HEADS SIGNAL SIGNAL ENGLISH

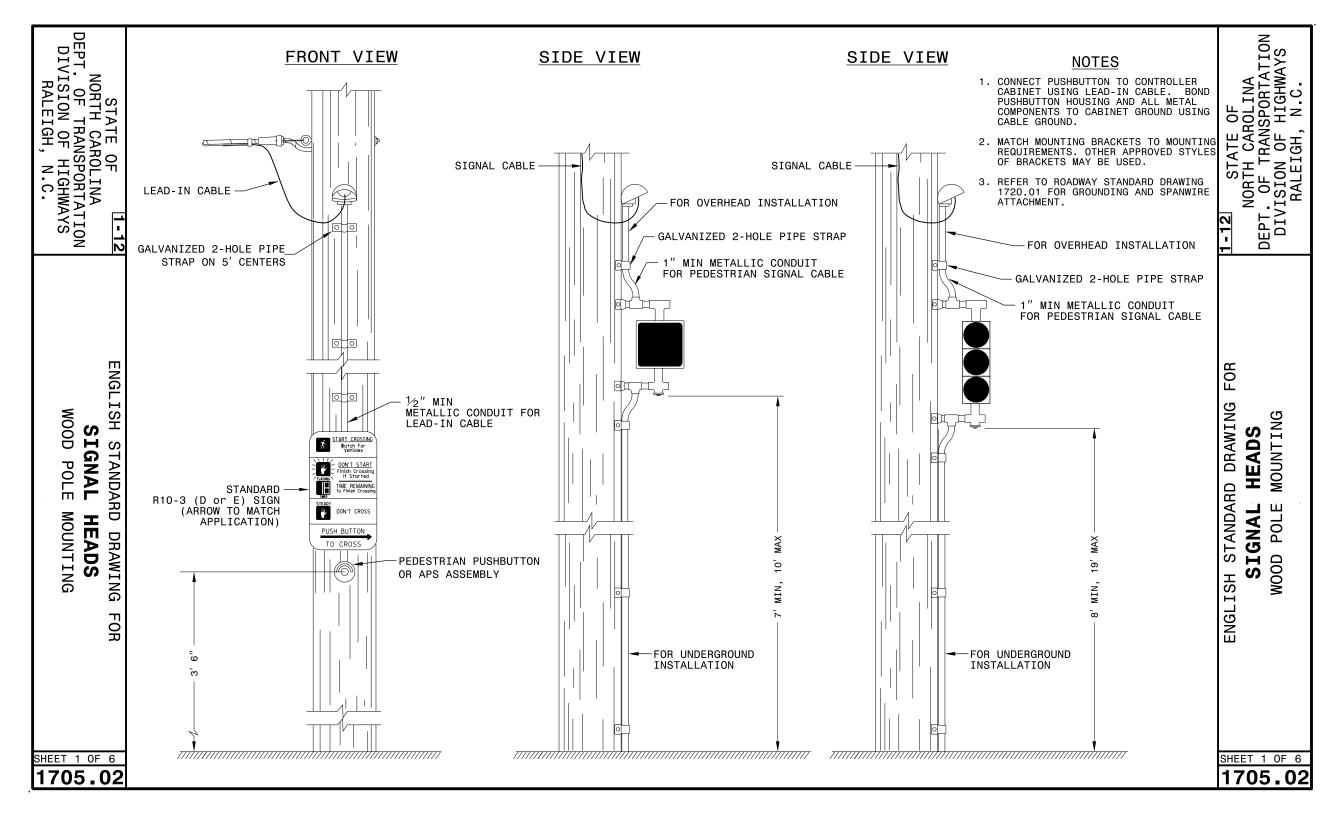
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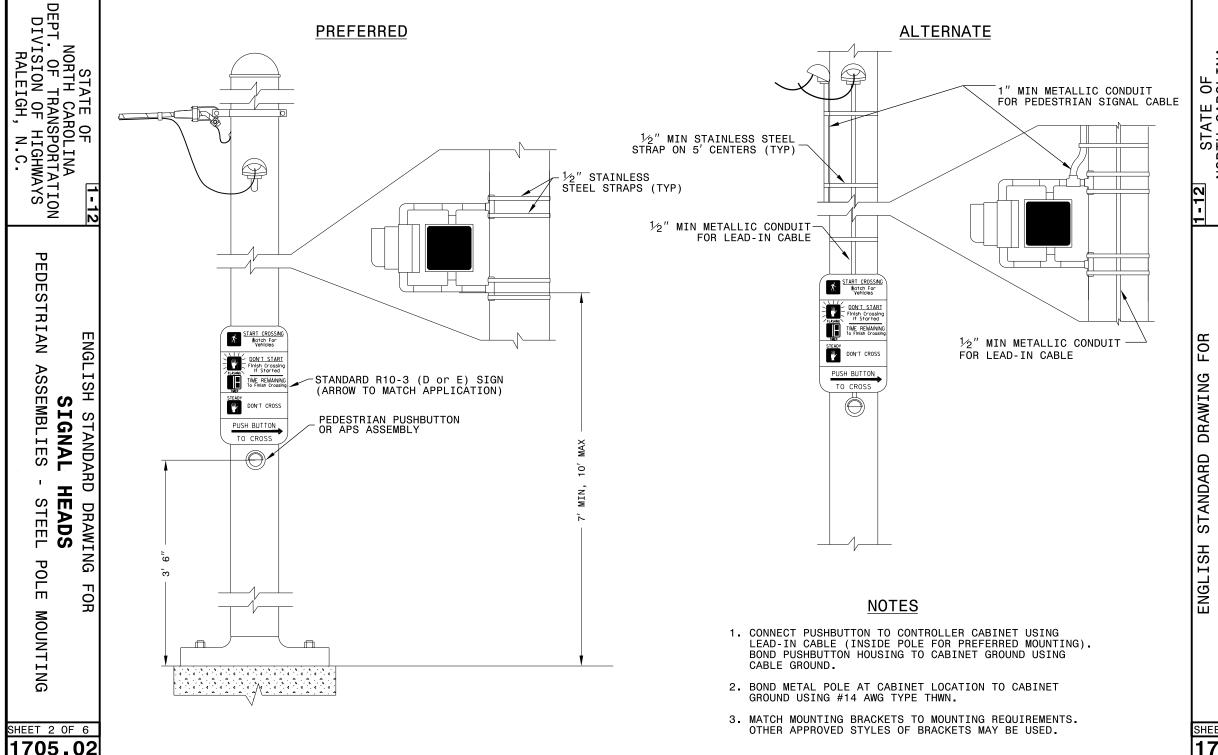
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SHEET 1 OF 2 1705.01 STATE OF

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DIVISION OF HIGHWAYS
RALEIGH, N.C. 1-12 STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C. STANDARD SIGNAL FACE CLEARANCES 1-12 TO RIGHT OF WAY PHASE DON'T WALK R -R R- WALK OFF ON I 2 PED 2 2 -CLEARANCE PHASES **√**G R G G G G G TR. ₽Y R STANDARD X R X R **CLEARANCES** FOR **ENGLISH** Y- R-G G/→ R/→ GG STANDARD DRAWING **HEADS** SIGNAL SIGNAL F_Y STANDARD DRAWING FF **→** М FACE R R R R R R R RRRRR R RR R $R \mid R$ -R -R -R -R ₽ | ₽ R→ R→ -R= **₽** SIGNAL FACE SIGNAL FDW DW DW FDW DW DW **HEADS** WALK DON' OFF OFF ON ON OFF **CLEARANCES** ON ENGLISH STANDARD FOR SHEET 2 OF 2 SHEET 2 OF 2 1705.01 1705.01

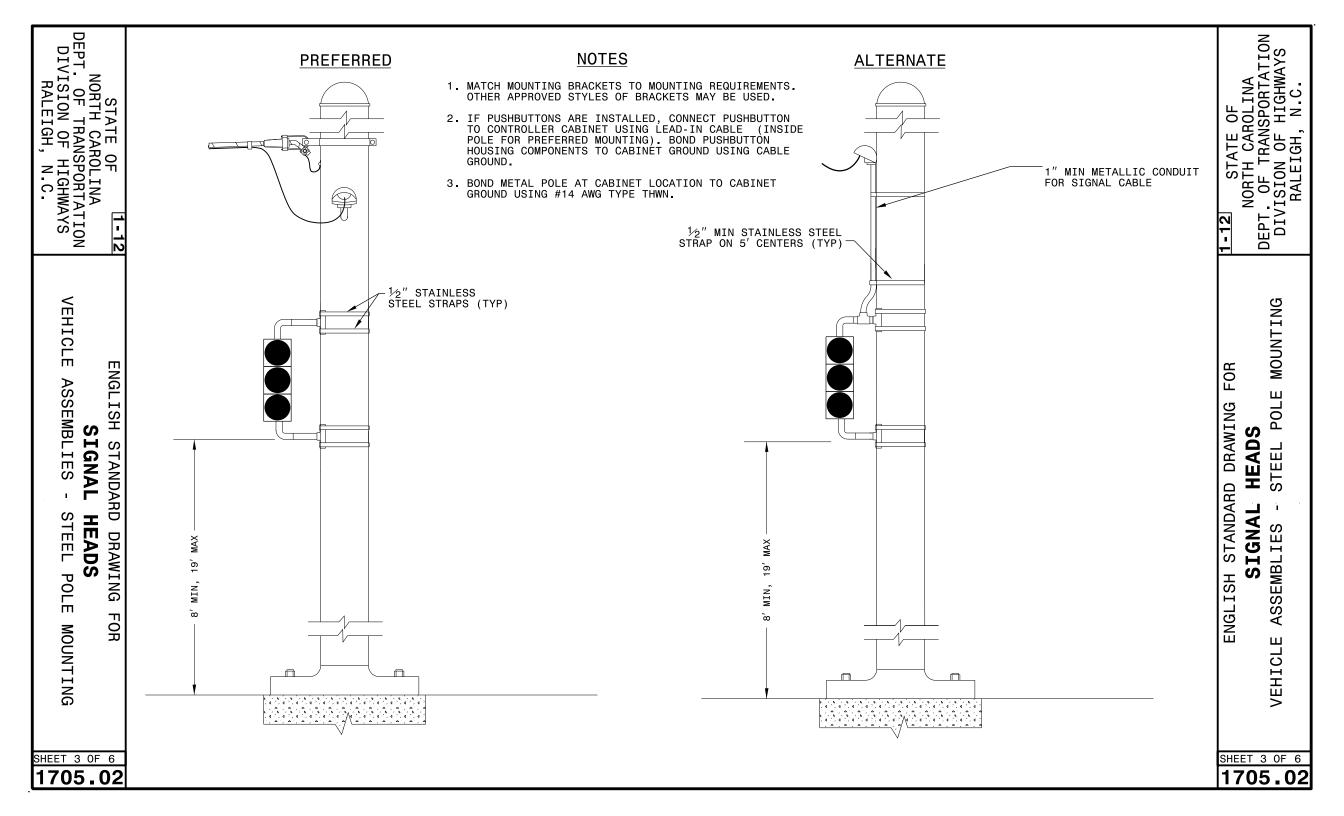




1-12 STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

MOUNTING Ш POL **EADS** STEEL Ŧ SIGNAL ASSEMBLIES **PEDESTRIAN**

SHEET 2 OF 6



STATE OF NORTH CAROLINA
T. OF TRANSPORTATION
VISION OF HIGHWAYS

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EDESTRIAN ENGLISH ASSEMBLIES SIGNAL HEADS PEDESTAL

STANDARD DRAWING

FOR

SHEET 4 OF 6 1705.02

MOUNTING

2-WAY PEDESTRIAN SIGNAL HEAD, AS REQUIRED BY PLANS (AIM AS REQUIRED) POST-TOP MOUNTED BRACKET W/CENTERPOST WITH 4-1/2" SLIP FITTER (TO MATCH NUMBER OF SIGNAL FACES) START CROSSING Watch For Vehicles STANDARD R10-3 (D or E) SIGN (ARROW TO MATCH APPLICATION) TIME REMAINING STEADY DON'T CROSS _PUSH BUTTON TO CROSS PEDESTRIAN PUSH-BUTTON OR APS ASSEMBLY 4-1/2" O.D. ALUMINUM PIPE MAX 10, MIN, 7 -TRANSFORMER BASE, IF REQUIRED HANDHOLE

1-WAY PEDESTRIAN SIGNAL HEAD, AS REQUIRED BY PLANS (AIM AS REQUIRED) POST-TOP 4-1/2" SLIP FITTER 10, MIN, TRANSFORMER BASE, IF REQUIRED-HANDHOLE -

NOTE

- 1. CONNECT PUSHBUTTON TO CONTROLLER CABINET USING LEAD-IN CABLE. BOND PUSHBUTTON HOUSING AND ALL METAL COMPONENTS TO CABINET GROUND USING CABLE GROUND.
- 2. BOND PEDESTAL ASSEMBLY TO CABINET GROUND WITH #14 AWG TYPE THWN.
- 3, REFER TO ROADWAY STANDARD DRAWING 1743 FOR PEDESTAL INFORMATION.

MOUNTING FOR **PEDESTAL** DRAWING **HEADS** ASSEMBLIES-STANDARD SIGNAL ENGLISH **PEDESTRIAN**

NORTH CAROLINA OF TRANSPORTATION VISION OF HIGHWAYS

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SHEET 4 OF

STATE OF NORTH CAROLINA
T. OF TRANSPORTATION
VISION OF HIGHWAYS

SINGLE PUSHBUTTON

START CROSSING Watch For Vehicles

DON'T START Finish Crossing If Started TIME REMAINING To Finish Crossing

> 9 'n

DON'T CROSS PUSH BUTTON TO CROSS

PEDESTRIAN IGNAL **HEADS**

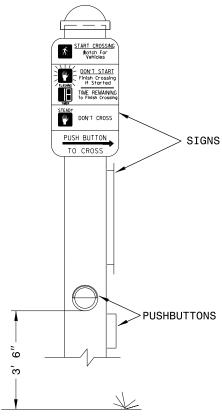
STANDARD R10-3 (D or E) SIGN (ARROW TO MATCH APPLICATION)

PEDESTRIAN PUSHBUTTON OR APS ASSEMBLY

ENGLISH STANDARD DRAWING FOR

ASSEMBLIES **PUSHBUTTON POST** MOUNTING

DUAL PUSHBUTTON



NOTES

- 1. CONNECT PUSHBUTTON TO CONTROLLER CABINET USING LEAD-IN CABLE. BOND PUSHBUTTON HOUSING AND ALL METAL COMPONENTS TO CABINET GROUND USING CABLE GROUND.
- 2. REFER TO ROADWAY STANDARD DRAWING 1743 FOR PEDESTAL INFORMATION.

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MOUNTING **POST PUSHBUTTON HEADS** IGNAL ASSEMBLIES **PEDESTRIAN**

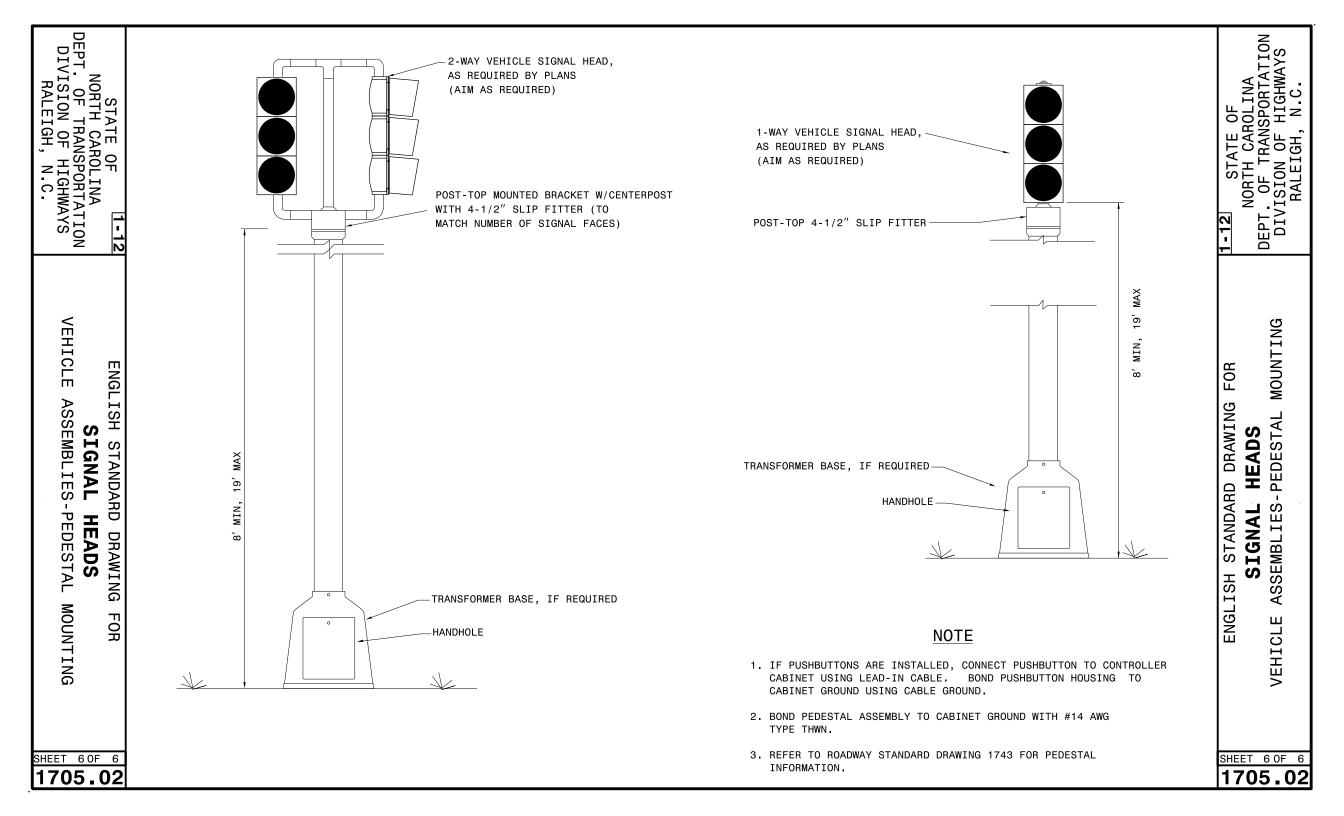
FOR

STANDARD DRAWING

ENGLISH

SHEET 5 OF 6

SHEET 5 OF 6 1705.02



STATE OF

NORTH CAROLINA
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR SIGNAL HEADS
WIRE COLOR CONVENTIONS

INDICATION TYPE/COLOR R PEDESTRIAN RY WIRE 5-SECTION 3-SECTION CIRCULAR 3-SECTION ARROW 3-SECTION 4-SECTION FYA (*) (*) COLOR FYA (Y)6 <u>)(</u> My - DON'T WALK R R RED $\frac{F}{Y}$ ⟨F Υ YELLOW Υ K- WALK G G **GREEN** RED-BLACK (R- (R- (R- STRIPE YELLOW-BLACK \leftarrow (Y \rightarrow \leftarrow STRIPE GREEN-BLACK \rightarrow STRIPE NEUTRAL WHITE

SOLID OR STRIPED COLORS MAY BE USED ON HEADS WITH MIXED INDICATION TYPES. WHERE PRACTICAL, COORDINATE WIRE COLOR WITH INDICATION COLOR. WHERE INSULATION COLOR DOES NOT MATCH THE INDICATION COLOR OF VEHICULAR DISPLAYS, WRAP APPROPRIATELY COLORED TAPE OVER INSULATION NEAR TERMINATION POINTS.

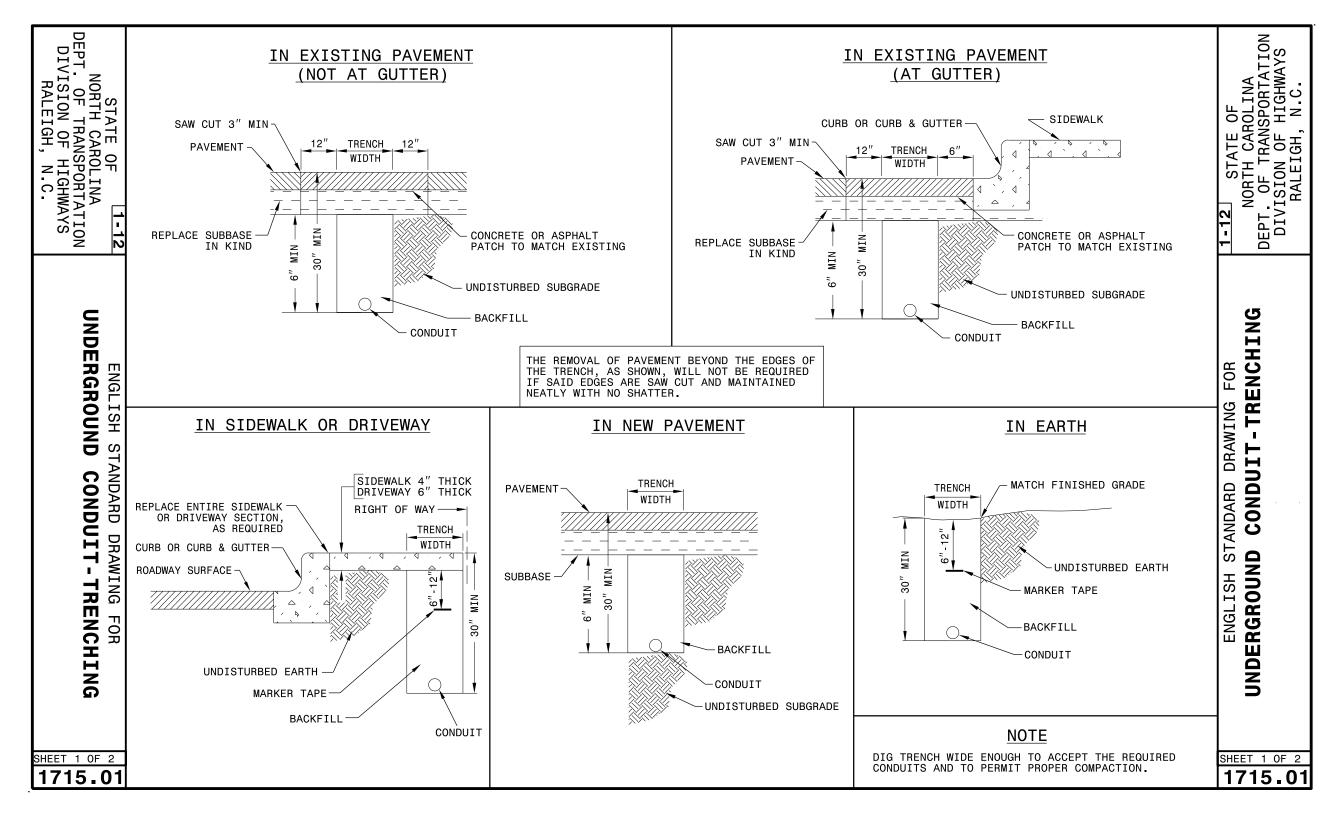
1-12 STATE OF
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RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR SIGNAL HEADS
WIRE COLOR CONVENTIONS

SHEET 1 OF

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SHEET 1 OF 1

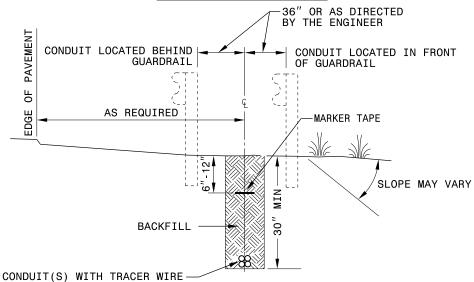


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VISION OF HIGHWAYS

UNDERGROUND ENGLISH STANDARD

CONDUIT-DRAWING TRENCHING FOR

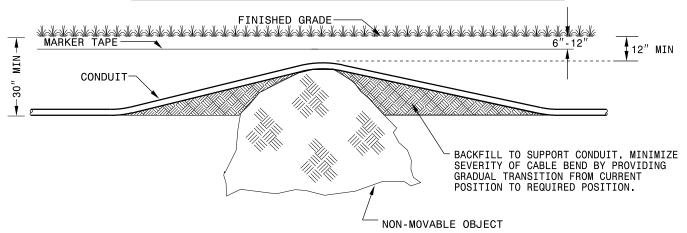
SHEET 2 OF 2 15.01 CONDUIT TRENCHING



NOTE

THE CONTRACTOR, WITH APPROVAL FROM THE ENGINEER, MAY ADJUST FINAL BURIAL DEPTH OF CONDUIT(S) IN ORDER TO TRAVERSE NON-MOVABLE OBJECTS.

CONDUIT TRENCHING AROUND NON-MOVABLE OBJECT



SHEET 2 OF 2

1-12 STATE OF
NORTH CAROLINA
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

-TRENCHING

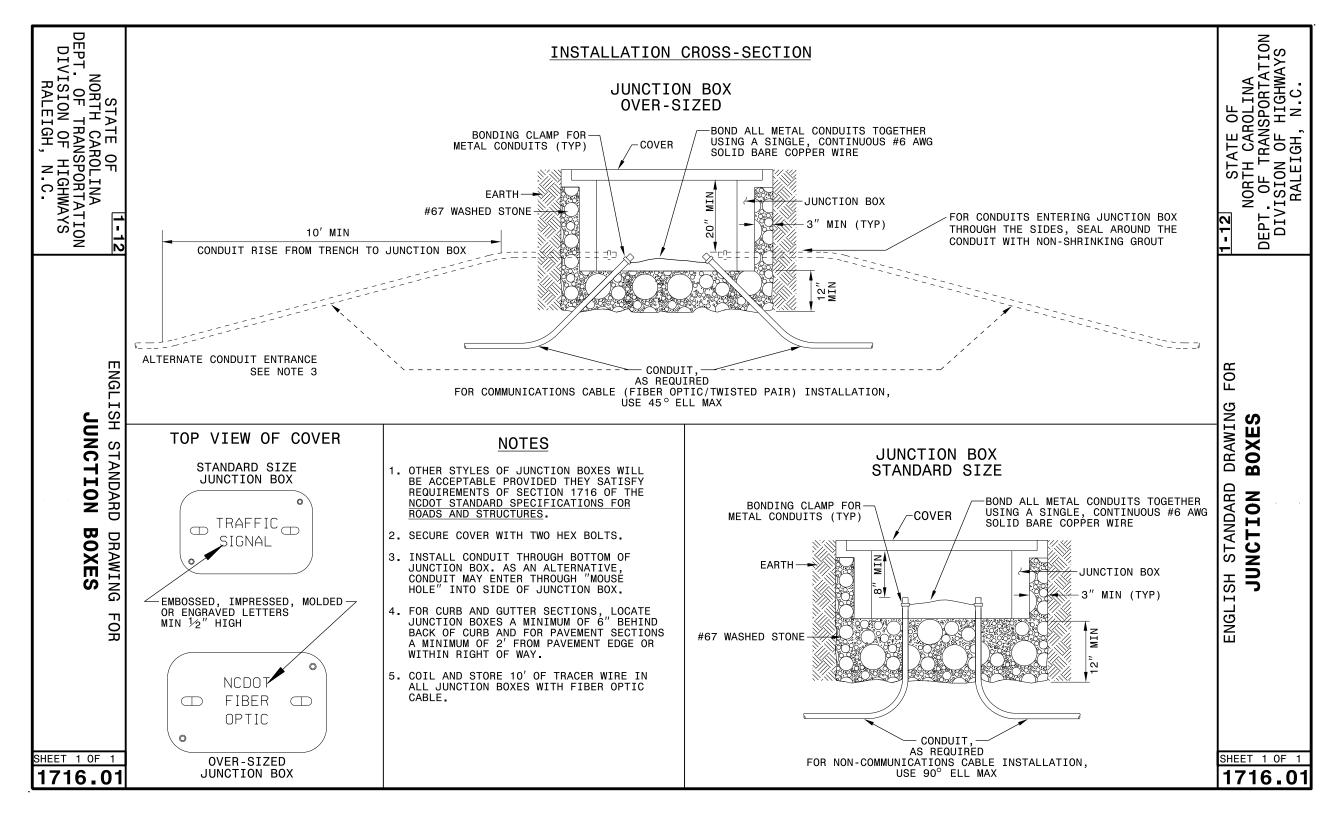
CONDUIT

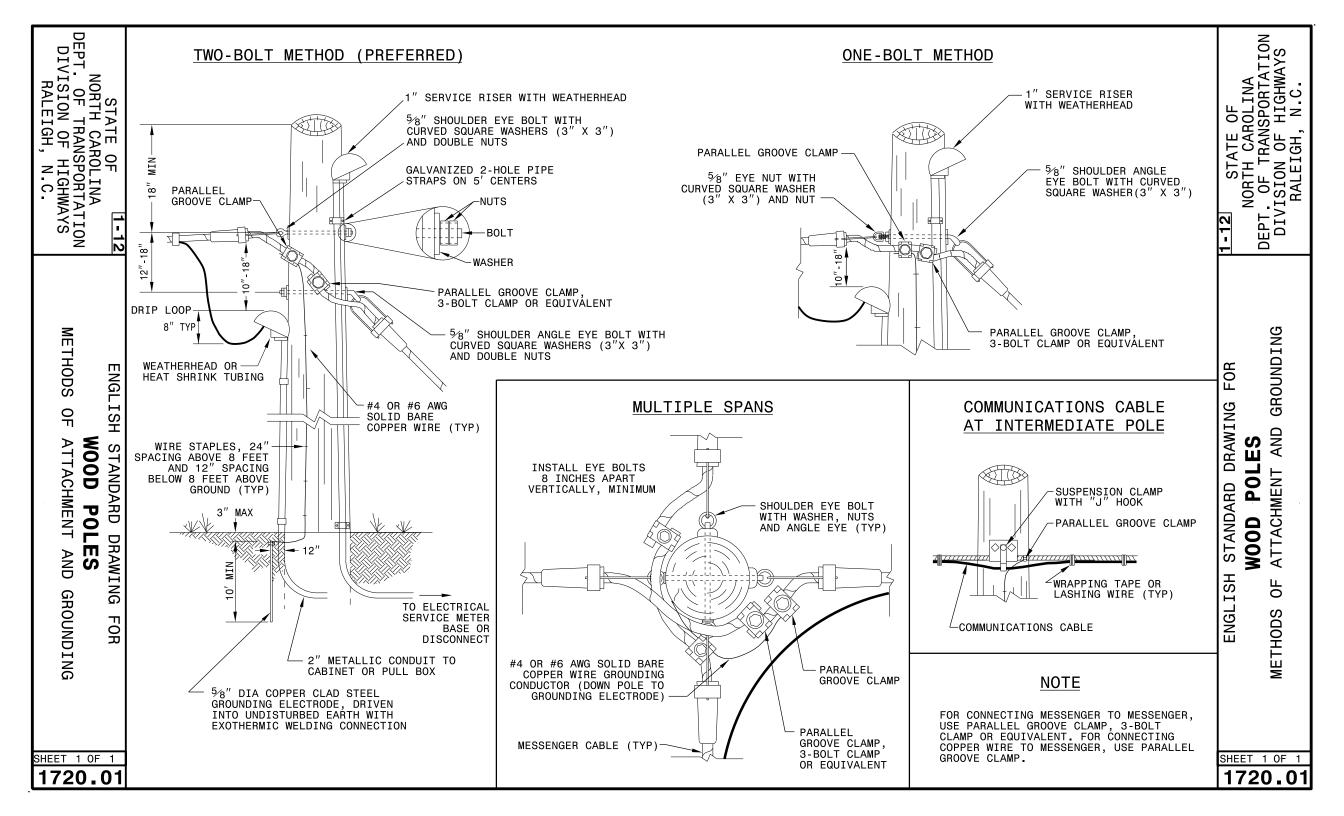
UNDERGROUND

ENGLISH

FOR

STANDARD DRAWING



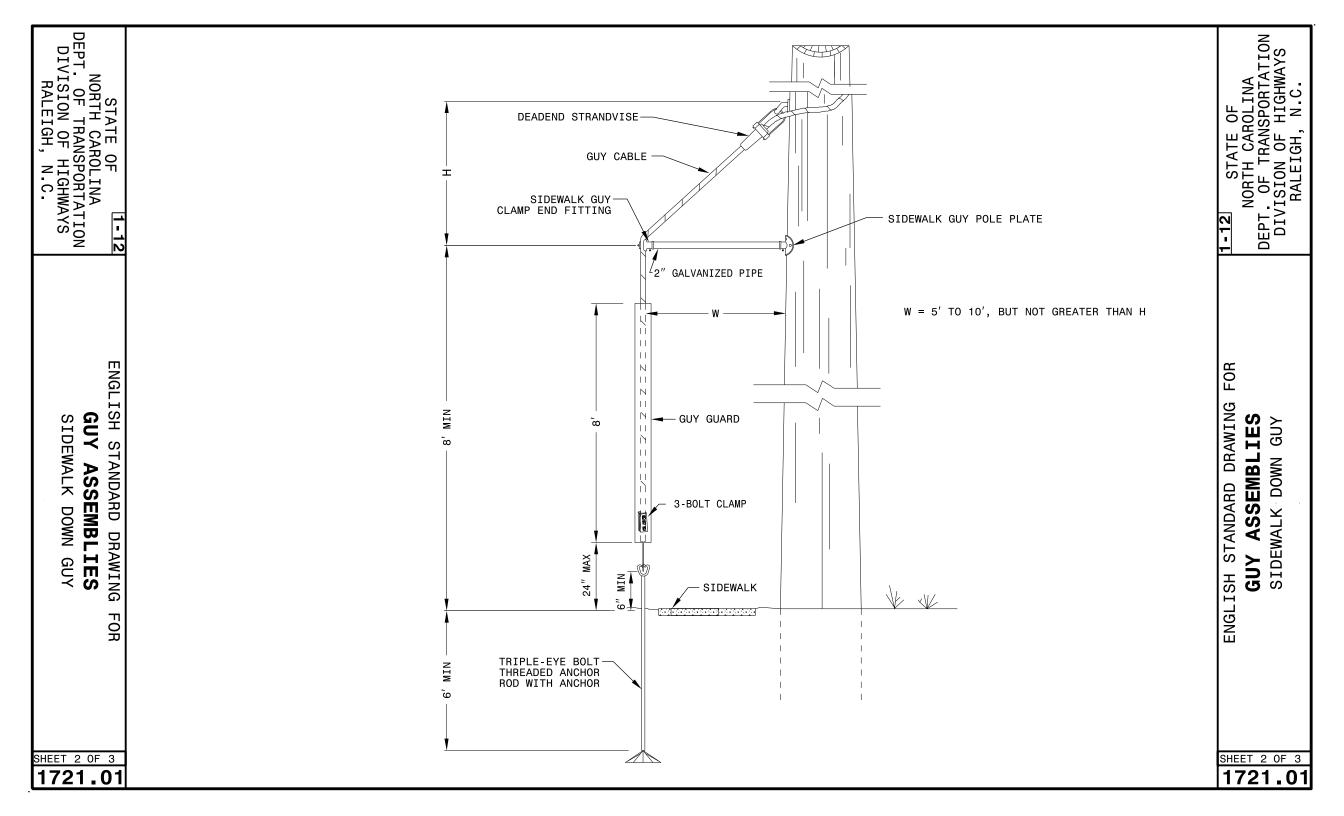


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DIVISION OF HIGHWAYS
RALEIGH, N.C. STATE OF
NORTH CAROLINA
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VISION OF HIGHWAYS
RALEIGH, N.C. DEADEND STRANDVISE-**GENERAL NOTES** 1. GUY EACH SPAN SEPARATELY. **GUY CABLE** 2. USE EYE HARDWARE (EYE BOLTS, EYE NUTS, ANGLE EYES, EYES, TRIPLE-EYE BOLT ANCHOR RODS) WITH ROUNDED GROOVES IN THE EYES. PROVIDE A SEPARATE GROOVE FOR EACH CABLE TO BE TERMINATED. 3. SEE ROADWAY STANDARD DRAWING 1720 FOR METHODS OF ATTACHMENT AND GROUNDING. FOR ENGLISH STANDARD DRAWING GUY DIRECT STANDARD **ASSEMBLIES** DOWN -GUY GUARD DRAWING GUY 3-BOLT CLAMP ENGLISH TRIPLE-EYE BOLT THREADED ANCHOR ROD WITH ANCHOR FOR H/3 OR 5', WHICHEVER IS GREATER SHEET 1 OF 3 SHEET 1 OF 3 $W_{MAX} =$ Н

ASSEMBLIES DOWN GUY

GUY

DIRECT

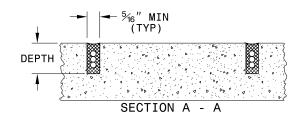


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RALEIGH, N.C. DEPT. DIV: STATE OF
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VISION OF HIGHWAYS
RALEIGH, N.C. DEADEND STRANDVISE DEADEND STRANDVISE MESSENGER CABLE ✓ MESSENGER CABLE PARALLEL GROOVE CLAMP GUY CABLE PARALLEL GROOVE CLAMP, 3-BOLT CLAMP OR EQUIVALENT FOR ENGLISH ENGLISH STANDARD DRAWING GUYS GUY AERIAL ASSEMBLIES STANDARD DRAWING (BACK) **ASSEMBLIES** (BACK) AERIAL GUYS GUY VARIES FOR ROADWAY SURFACE -SHEET 3 OF 3 SHEET 3 OF 3 1721.01

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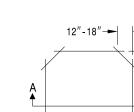
SAW SLOT DEPTH CHART

NO. OF WIRE TURNS DEPTH (IN) 2 3 4 5 6 CONCRETE 2.0 2.0 2.5 2.5 3.0 **ASPHALT** 2.0 | 2.5 | 3.0 | 3.0 | 3.0

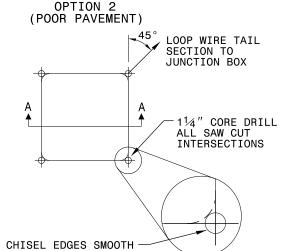


CONVENTIONAL 4-SIDED LOOP

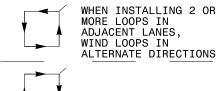
SAW CUT OPTIONS



OPTION 1



LOOP WINDING METHOD **START** ✓ FINISH



LOOP WIRE TWISTING METHOD

INCORRECT WAY TO TWIST WIRE



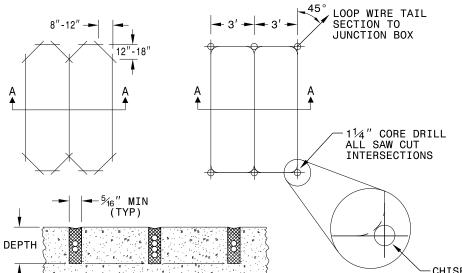
NOTES

- OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
- MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
- 3. WIRE LOOPS CONNECTED TO THE SAME DETECTOR CHANNEL IN SERIES.
- 4. LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS OR APPROVED BY ENGINEER.

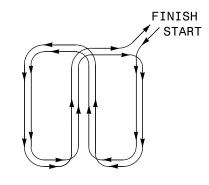
QUADRUPOLE LOOP

SAW CUT OPTIONS

OPTION 1 OPTION 2 (POOR PAVEMENT)



LOOP WINDING METHOD



CHISEL EDGES SMOOTH

SECTION A - A DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

SHEET 1 OF 3

NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

LOOPS

DETECTION

FOR

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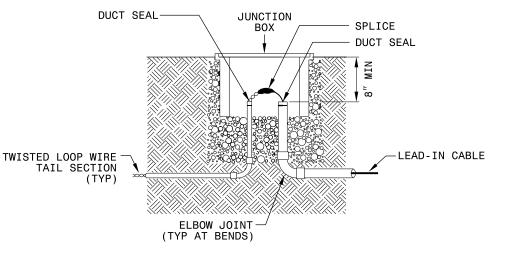
SHEET 1 OF 3

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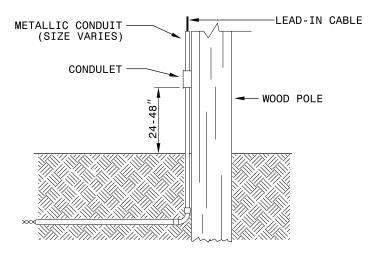
SHEET 2 OF 3

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

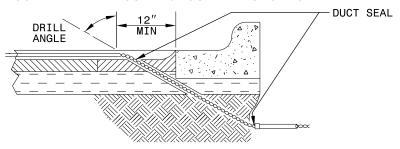


NOTE

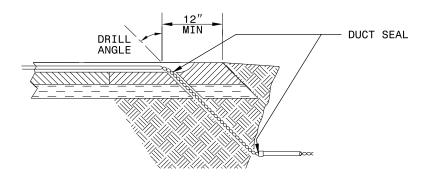
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

LOOP WIRE PAVEMENT EDGE DETAILS

LOOP WIRE AT CURB & GUTTER SECTION



LOOP WIRE AT PAVEMENT SECTION



NOTES

- 1. DO NOT EXCAVATE UNDER CURB AND GUTTER SECTIONS FOR CONDUIT INSTALLATION.
- 2. TWIST LOOP WIRE TAIL SECTIONS FROM WHERE LOOP WIRE TAIL LEAVES SAW CUT TO JUNCTION BOX, INCLUDING THROUGH CONDUIT.
- 3. BEFORE SEALING LOOPS, INSTALL DUCT SEAL WHERE LOOP WIRE TAIL SECTION LEAVES SAW CUT IN PAVEMENT AND AT ENTRANCE OF CONDUIT TO JUNCTION BOX.

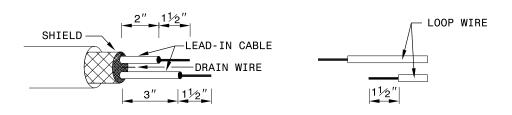
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LOOPS FOR DRAWING DETAILS DETECTION DETAIL WIRE LOOP Ш INDUCTIV ENGLISH

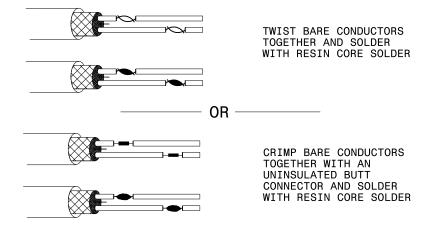
SHEET 2 OF 3

FOR

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE

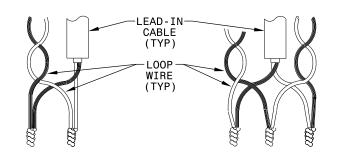


STEP 2. CONNECT AND SOLDER

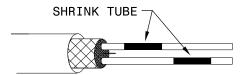


BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

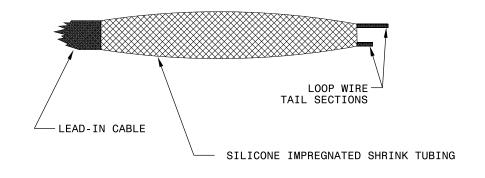
LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS SINGLE CONNECTION SERIES CONNECTION



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



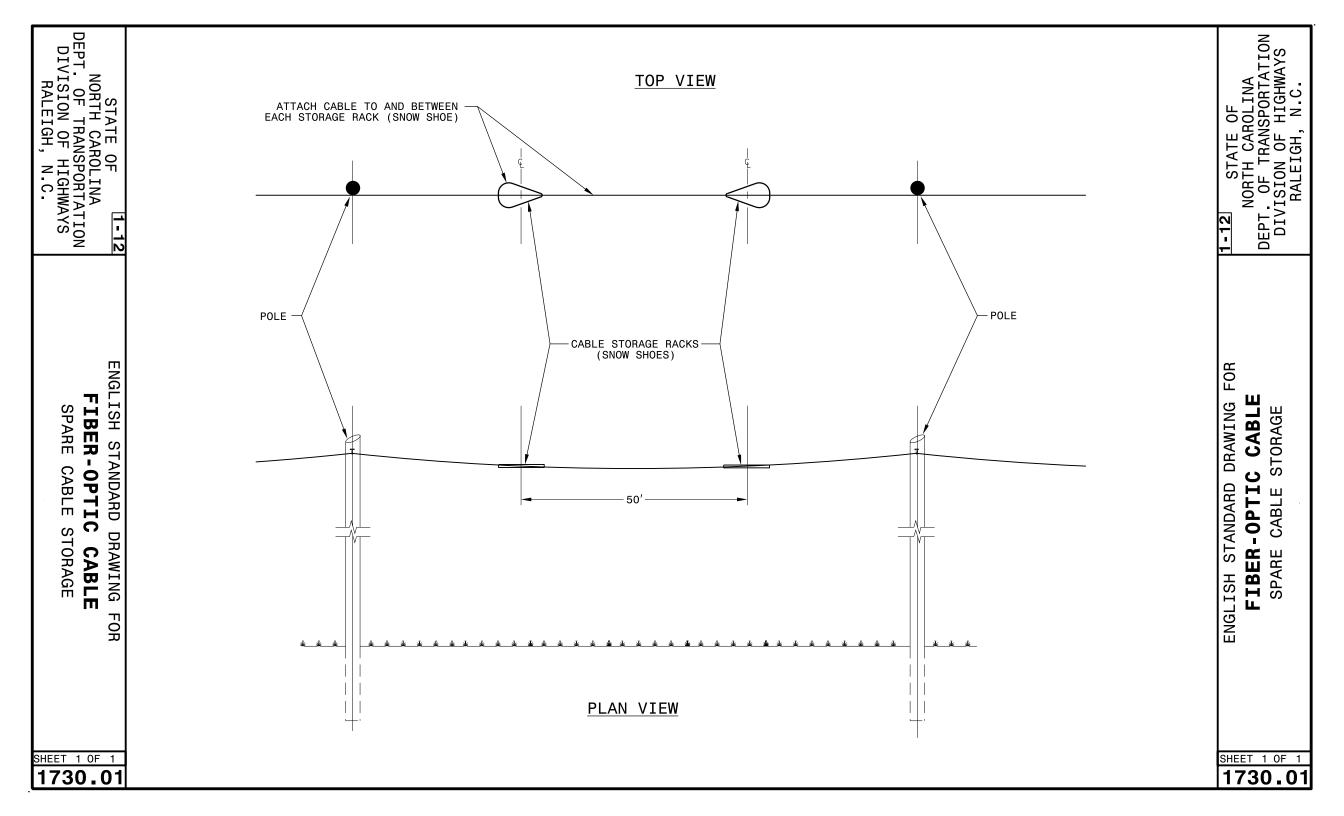
STEP 4. ENVIRONMENTALLY PROTECT SPLICE

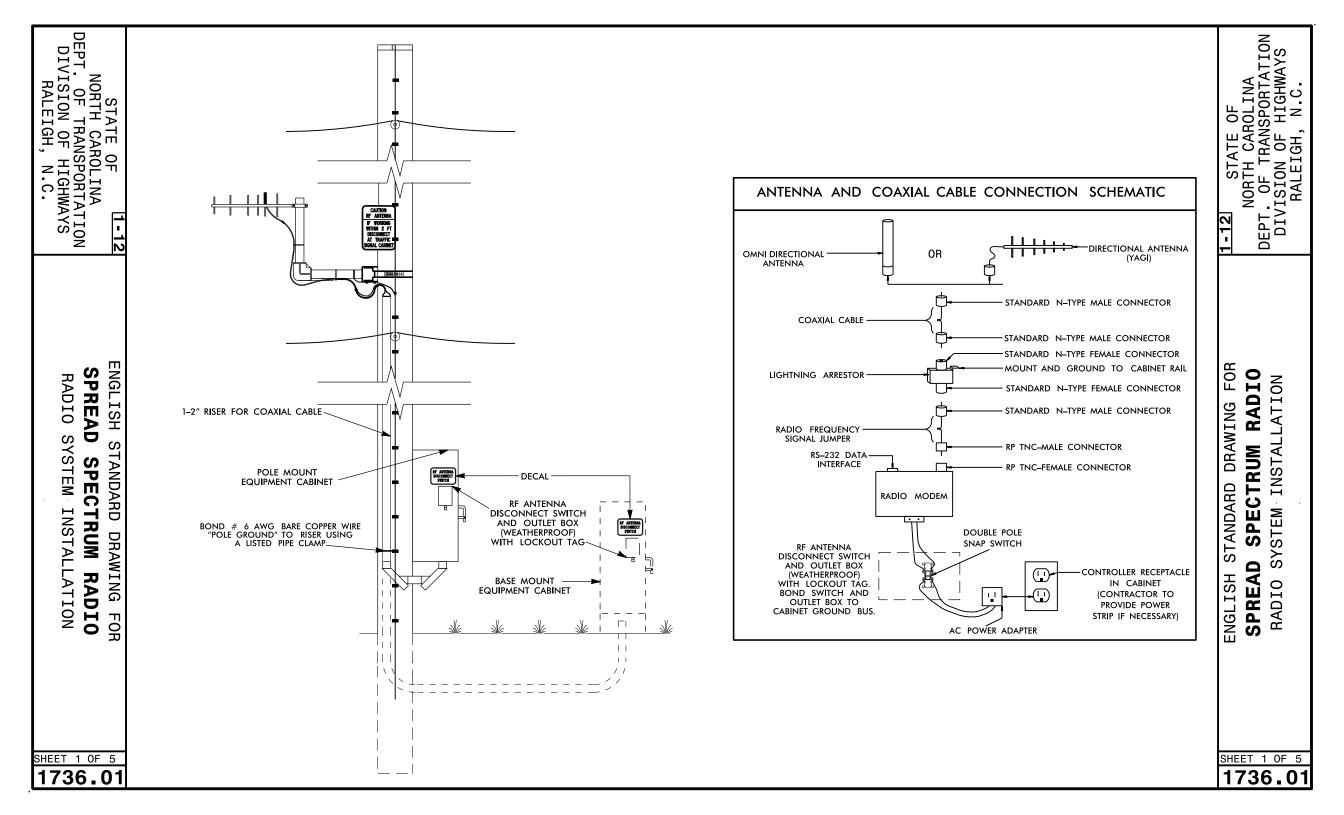


WIRE LOOPS LOOP FOR AND DRAWING DETECTION CABLE ENGLISH DETAIL LEAD-IN INDUCTIVE FOR CING \mathbf{H}

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SHEET 3 OF 3





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WOOD POLE — BOND # 6 AWG SOLID BARE COPPER WIRE TO ANTENNA SUPPORT USING LISTED PIPE CLAMP. BOND OTHER END OF # 6 AWG SOLID BARE COPPER WIRE TO THE POLE GROUND USING A SPLIT BOLT CONNECTOR. BOND SHIELD OF COAXIAL CABLE WITH AN APPROVED GROUNDING SYSTEM (USING #6 AWG STRANDED COPPER WIRE) BONDED TO THE POLE GROUND. WEATHERPROOF THE CONNECTION ONCE THE GROUNDING SYSTEM IS INSTALLED. ENSURE "POLE GROUND" IS IN PLACE.

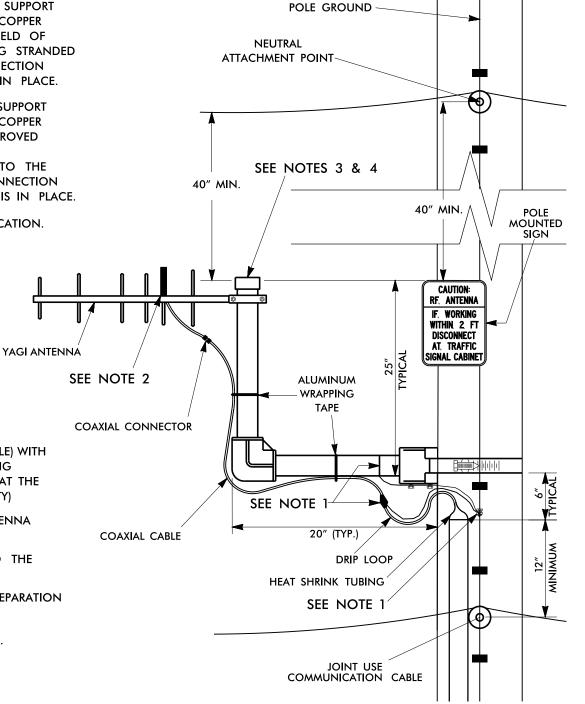
METAL POLE — BOND # 6 AWG SOLID BARE COPPER WIRE TO ANTENNA SUPPORT USING LISTED PIPE CLAMP. BOND OTHER END OF # 6 AWG SOLID BARE COPPER WIRE TO THE POLE OR EXISTING SYSTEM GROUND USING A METHOD APPROVED BY THE ENGINEER. BOND SHIELD OF COAXIAL CABLE WITH AN APPROVED GROUNDING SYSTEM (USING #6 AWG STRANDED COPPER WIRE) BONDED TO THE POLE BY A METHOD APPROVED BY THE ENGINEER. WEATHERPROOF THE CONNECTION ONCE THE GROUNDING SYSTEM IS INSTALLED. ENSURE "SYSTEM GROUND" IS IN PLACE.

2. YAGI ANTENNA SHOWN IN VERTICAL POLARIZATION POSITION FOR CLARIFICATION.

TYPICALLY INSTALL ANTENNA IN HORIZONTAL POLARIZATION POSITION.

3. TO CONSERVE VERTICAL SPACING ON THE POLE (JOINT-USE OR SIGNAL POLE) WITH REGARDS TO THE SURROUNDING UTILITIES, INSTALL THE ANTENNA MOUNTING HARDWARE USING ONE OF THE TWO METHODS LISTED BELOW: (ENSURE THAT THE MOUNTING METHOD DOES NOT DEGRADE THE ANTENNA'S SIGNAL INTEGRITY)

- A) ROTATE THE VERTICAL SUPPORT ARM 90 DEGREES SUCH THAT THE ANTENNA IS AT THE SAME HEIGHT AS THE HORIZONTAL SUPPORT ARM.
- B) ELIMINATE THE VERTICAL SUPPORT ARM AND MOUNT THE ANTENNA TO THE HORIZONTAL SUPPORT ARM.
- C) ANTENNA, ANTENNA SUPPORT ARM, AND SIGN TO MAINTAIN A 40" SEPARATION FROM NEUTRAL / POWER AND 12" FROM OTHER UTILITIES.
- 4. INSTALL AN END CAP TO SEAL THE EXPOSED END OF THE MOUNTING PIPE.



 $\overline{\Box}$

FOR

DRAWING

STANDARD

ENGLISH

RADIO

SPECTRUM

SPREAD

HEET 2 OF

CABLE

COAXIAL

AND

ANTENNA

SHEET 2 OF 5

'**36.0**1

STATE OF NORTH CAROLINA
T. OF TRANSPORTATION
VISION OF HIGHWAYS RALEIGH,

쮸

ANTENNA

DISCONNECT

ENGLISH SPREAD S TANDARD SPECTRUM DRAWING RADIO DECAL FOR **DECAL**

SIGN NUMBER: SP05224 BACKG COLOR: Yellow DESIGN BY: S PIOTROWSKI CHECKED BY: SUSAN B. KUNZ DATE: Jul 18,2005 COPY COLOR: Black TYPE: DECAL PROJECT ID: DIV: INTELLIGENT TRANSPORTATION SYSTEM ID QUANTITY: SYMBOL Υ WID HT 0'-9" SIGN WIDTH: 0'-9" HEIGHT: 0'-6" TOTAL AREA: 0.4 Sq.Ft. **ANTENNA** NOTE: **BORDER TYPE: FLUSH** RECESS: 0" THIS WIDTH: 0.25" Tø.5" RADII: 1" DISCONNECT SIGN MAT'L: 0.063" (1.6 mm) ALUMINUM NO. Z BARS: LENGTH: Tø.5' SHALL **SWITCH** USE NOTES: 2, 4 BE 1. Legend and border shall be direct applied Type III reflective sheeting. **PRODUCED** 2. Legend and border shall be direct applied non-reflective sheeting 3. Shields shall be Type III reflective sheeting on 0.032" (0.8mm) aluminum and demountable. AS 0.9 0.9 7.2" 4 Background shall be Type III reflective sheeting. 5. Background shall be Type I reflective sheeting. BORDER 6 Center arrow(s) vertically on sign. DECAL R = 1 " 7. Bottom panel shall be yellow Type III sheeting. Legend shall be direct applied black non-reflective TH=0.25

LETTER POSITIONS

sheeting. Yellow panel is:

								Leti	ter	spac	ings	s ar	e to	st	art	of ı	next	let	ter					Series/Si: Text Leng
	R	F		A	N	т	E	N	N	Α														C1
0.9	0.8	0.5	1	0.8	0.7	0.7	0.7	0.8	0.7	0.6	0.9													7.2
	D	I	s	С	0	N	N	E	С	т														C1
1.2	0.8	0.3	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.5	1.2													6.7
	s	w	I	Т	С	Н																		C1
2.6	0.7	0.9	0.3	0.7	0.7	0.5	2.6																	3.9
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1							İ			1														
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SHEET 3 OF 5

36.01

RADIO DECAL STANDARD DRAWING DISCONNECT SPECTRUM ANTENNA SPREAD ENGLISH RF

FOR

NORTH CAROLINA OF TRANSPORTATION ISION OF HIGHWAYS

DEPT DIV

9

SHEET 3 OF

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

SPREAD SPECTRUM RADIO

RF

ANTENNA

WARNING

SIGN

POLE MOUNTED SIGN

SIGN NUMBER: SP05223 BACKG COLOR: Yellow COPY COLOR: **Black** TYPE: QUANTITY: SYMBOL Υ WID HT 0.2 8.2 8.6 1.0 BAR SIGN WIDTH: 0'-9" HEIGHT: 1'-0" TOTAL AREA: 0.8 Sq.Ft. **BORDER TYPE: FLUSH** RECESS: 0" WIDTH: 0.2" RADII: MAT'L: 0.063" (1.6 mm) ALUMINUM NO. Z BARS: LENGTH:

USE NOTES: 2, 4

- 1 Legend and border shall be direct applied Type III reflective sheeting.
- 2 Legend and border shall be direct applied non-reflective sheeting.
- 3 Shields shall be Type III reflective
- sheeting on 0.032" (0.8mm) aluminum and demountable.
- 4 Background shall be Type III reflective sheeting.
- 5 Background shall be Type I reflective sheeting.
- 6 Center arrow(s) vertically on sign.
- 7 Bottom panel shall be yellow Type III sheeting. Legend shall be direct applied black non-reflective sheeting. Yellow panel is:

DESIGN BY: M. TRACEY DATE: Oct 25, 2007
PROJECT ID: DIV: INTELLIGNET TRANSPORTATION SYSTEMS

CAUTION:
RF ANTENNA

IF WORKING
WITHIN 2 FT
DISCONNECT
AT TRAFFIC
SIGNAL CABINET

BORDER 0.2*

B

CHECKED BY: SUSAN KUNZ

0.60 SPACING FACTOR

LETTER POSITIONS

								Lett	ter	spac	ings	ar	e to	sta	art	of ı	next	let	ter				Series/Siz Text Lengt
	С	Α	U	Т	I	0	N	:															С
2.3	0.6	0.7	0.6	0.6	0.3	0.7	0.7	0.1	2.3														4.4
	R	F		Α	N	Т	E	N	N	Α													С
1.1	0.7	0.5	1	0.7	0.6	0.6	0.6	0.7	0.6	0.6	1.1												6.7
	I	F		w	0	R	К	I	N	G													С
1.4	0.3	0.5	1	0.8	0.7	0.7	0.6	0.3	0.7	0.5	1.4												6.1
	w	I	Т	н	I	N		2		F	т												С
1.1	0.9	0.2	0.6	0.7	0.3	0.5	1	0.5	1	0.6	0.5	1.1											6.8
	D	I	s	С	0	N	N	Е	С	т													С
1.5	0.7	0.3	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.5	1.5												6
	Α	Т		Т	R	Α	F	F	I	С													С
1.4	0.7	0.5	1	0.6	0.6	0.7	0.6	0.6	0.3	0.6	1.4												6.2
	S	I	G	N	Α	L		С	Α	В	I	N	Е	т									С
0.5	0.7	0.3	0.7	0.6	0.7	0.5	0.4	0.6	0.7	0.7	0.3	0.7	0.6	0.5	0.5								7.9
																							1

SHEET 4 OF 5

1736.01

SHEET 4 OF

NORTH CAROLINA OF TRANSPORTATION ISION OF HIGHWAYS

> DEPT DIV

0

FOR

DRAWING

STANDARD

RADIO

SPECTRUM

ENGLISH 8
SPREAD

SIGN

WARNING

ANTENNA

RF

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NORTH CAROLINA
T. OF TRANSPORTATION
VISION OF HIGHWAYS RALEIGH, POWER,

SPREAD SPECTRUM RADIO

ENGLISH STANDARD DRAWING FOR

FOR STANDALONE GROUND AND AUXILIARY REPEATER POWER CABINET SYSTEMS

SHEET 5 OF 5

1736.01

30A MIN CONTROL BREAKER RFI 0 AC+ **FILTER** 15A MIN AUXILLARY BREAKER FAN THERMOSTAT LAMPS POWER LINE SURGE PROTECTOR DOOR SWITCH STAGE 2 AC IN AC+ OUT GFI RECEPTACLE TO CONTROL EQUIPMENT, RECEPTACLE STAGE 1 AC IN AC NEUTRAL OUT NEUTRAL **NEUTRAL NEUTRAL** 0-**NEUTRAL BUS** IN GROUND EARTH GROUND 0-GROUND BUS ► CABINET SHELL / LIGHTNING ARRESTOR

NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. SYSTEMS FOR **RADIO** POWER STANDARD DRAWING AUXILIARY SPECTRUM AND SPREAD ENGLISH GROUND FOR

CABINET

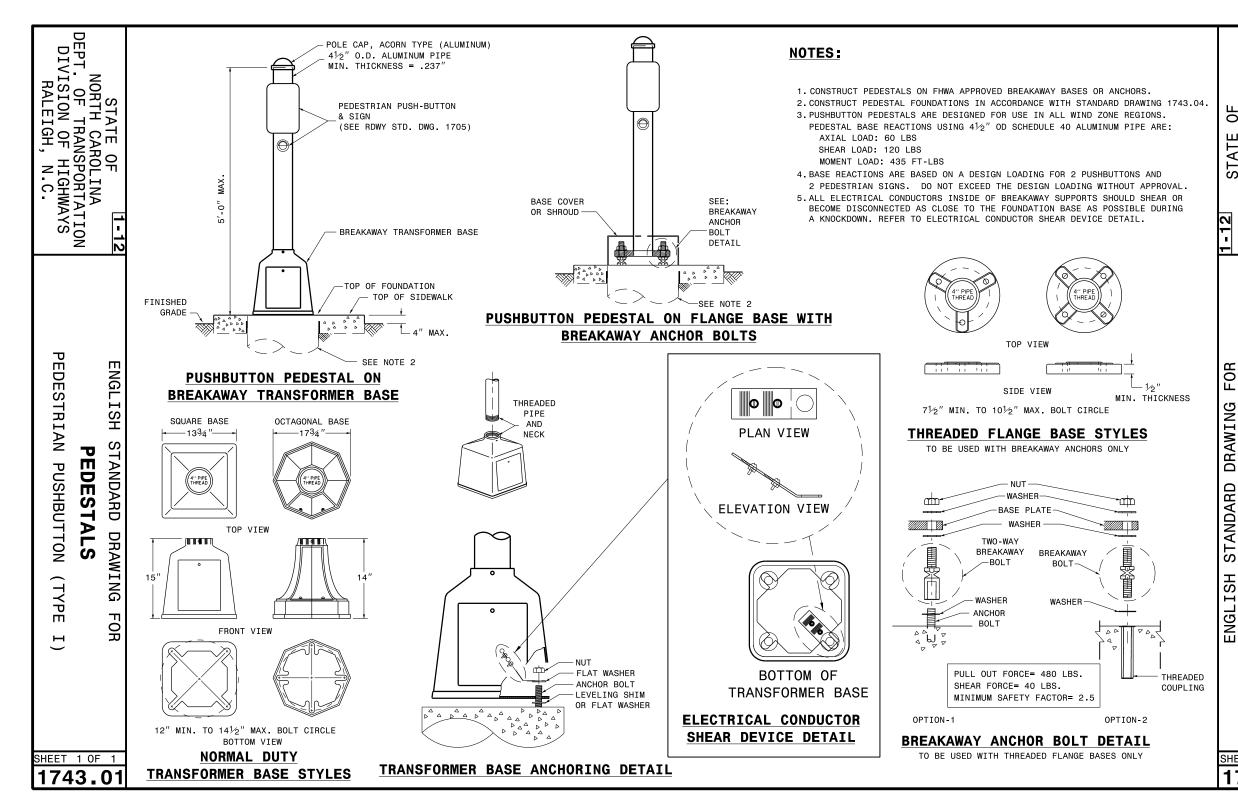
REPEATER

STANDALONE

9

SHEET 5 OF 5

POWER



SHEET 1 OF 1743.

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TYPE

PUSHBUTTON PEDESTAL

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T. OF TRANSPORTATION

VISION OF HIGHWAYS **ENGL** HSI NORMAL **STANDARD EDES** DUTY TAL (TYPE DRAWING

FOR

SHEET 1 OF 1

71/2" MIN. TO 10" MAX. BOLT CIRCLE BOTTOM VIEW **NORMAL DUTY** TRANSFORMER BASE STYLES

10'-0"

8′-0″

NORMAL DUTY PEDESTAL ON

BREAKAWAY TRANSFORMER BASE

OCTAGONAL BASE

-17³⁄4″

FINISHED GRADE

SQUARE BASE

13¾"-

TOP VIEW

FRONT VIEW

SEE BREAKAWAY BASE COVER **ANCHOR** OR SHROUD **BOLT** DETAIL SEE NOTE 2

POLE CAP, ACORN TYPE (ALUMINUM)

4½" OD ALUMINUM PIPE

BREAKAWAY TRANSFORMER

> T0P 0F

FOUNDATION

OF SIDEWALK

SEE NOTE 2

MIN. THICKNESS = 0.2370'

NORMAL DUTY PEDESTAL ON FLANGE BASE WITH **BREAKAWAY ANCHOR BOLTS**

-FLAT WASHER

ANCHOR BOLT

LEVELING SHIM

OR FLAT WASHER

THREADED

PIPE

AND

NECK

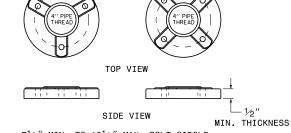
NOTES:

- 1. CONSTRUCT PEDESTALS ON FHWA APPROVED BREAKAWAY BASES OR ANCHORS.
- 2. CONSTRUCT PEDESTAL FOUNDATIONS IN ACCORDANCE WITH STANDARD DRAWING 1743.04.
- 3. NORMAL DUTY PEDESTALS ARE DESIGNED FOR USE IN ALL WIND ZONE REGIONS.

AXIAL LOAD: 270 LBS SHEAR LOAD: 370 LBS

MOMENT LOAD: 2,580 FT-LBS

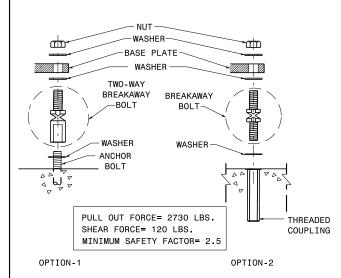
- 4. BASE REACTIONS ARE BASED ON A DESIGN LOADING FOR 2 3 SECTION SIGNAL HEADS 2 - PEDESTRIAN SIGNALS, 2 PUSHBUTTONS AND 2 PEDESTRIAN SIGNS. DO NOT EXCEED DESIGN LOADING WITHOUT APPROVAL.
- 5. ALL ELECTRICAL CONDUCTORS INSIDE OF BREAKAWAY SUPPORTS SHOULD SHEAR OR BECOME DISCONNECTED AS CLOSE TO THE FOUNDATION BASE AS POSSIBLE DURING A KNOCKDOWN. REFER TO ELECTRICAL CONDUCTOR SHEAR DEVICE DETAIL.

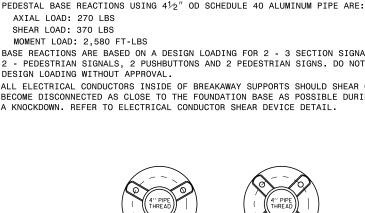


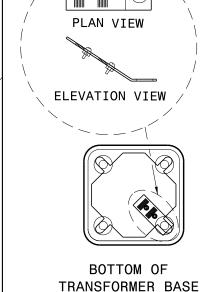
 $7\frac{1}{2}$ " MIN. TO $10\frac{1}{2}$ " MAX. BOLT CIRCLE

THREADED FLANGE BASE STYLES

TO BE USED WITH BREAKAWAY ANCHORS ONLY







ELECTRICAL CONDUCTOR

DEVICE DETAIL

SHEAR

BREAKAWAY ANCHOR BOLT DETAIL

TO BE USED WITH THREADED FLANGE BASES ONLY

DRAWING STANDARD S EDE **ENGLISH**

FOR

CAROLINA TRANSPORTATION OF HIGHWAYS

OF TRANISION OF

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NORMAL

SHEET 1 OF 1743

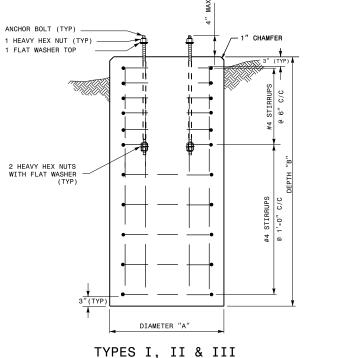
H CAROLINA TRANSPORTATION N OF HIGHWAYS STATE OF NORTH CAROLINA
T. OF TRANSPORTATION
VISION OF HIGHWAYS NOTES: METAL CAP 1. CONSTRUCT PEDESTALS ON FHWA APPROVED BREAKAWAY BASES OR ANCHORS. 2. CONSTRUCT PEDESTAL FOUNDATIONS IN ACCORDANCE WITH STANDARD DRAWING 1743.04. 3. PUSHBUTTON PEDESTALS ARE DESIGNED FOR USE IN ALL WIND ZONE REGIONS. $_4\frac{1}{2}$ " OD SCHEDULE 120 STEEL PIPE STATE PEDESTAL BASE REACTIONS USING 41/2" OD SCHEDULE 120 GALVANIZED STEEL PIPE ARE: AXIAL LOAD: 600 LBS EPT. OF TI DIVISION RALEI SHEAR LOAD: 1,500 LBS NORTH MOMENT LOAD: 14,500 FT-LBS 4. BASE REACTIONS ARE BASED ON A DESIGN LOADING FOR 2 - 12" SIGNALS AND A 48" X 48" SIGN. DO NOT EXCEED DESIGN LOADING WITHOUT APPROVAL. 5. ALL ELECTRICAL CONDUCTORS INSIDE OF BREAKAWAY SUPPORTS SHOULD SHEAR OR BECOME DISCONNECTED AS CLOSE TO THE FOUNDATION BASE AS POSSIBLE DURING DEP⁻ A KNOCKDOWN. REFER TO ELECTRICAL CONDUCTOR SHEAR DEVICE DETAIL. 6. DO NOT USE BREAKAWAY ANCHOR BOLTS WITH THIS TYPE OF PEDESTAL. WELD 41/2" OD PIPE TO CENTER OF 1" X 11" X 11" STEEL PLATE ENGLISH PLAN VIEW **HEAVY** DRAWING \mathbf{H} \mathbf{H} **ELEVATION VIEW** STANDARD TYPE AL **PEDESTALS** DUTY EDEST/ STANDARD DUTY TOP OF TRANSFORMER BASE HEAVY DUTY TRANSFORMER BASE BOLT CIRCLE: 10" TO 12" (TYPE PROJECTION: SEE 1743.04 DRAWING TOP OF FOUNDATION TOP OF SIDEWALK HEAVY -FINISHED GRADE ENGLISH BOTTOM OF FOR ANCHOR BOLT DETAILS TRANSFORMER BASE SEE STANDARD DRAWING 1743.04 FOR **ELECTRICAL CONDUCTOR** SHEAR DEVICE DETAIL TRANSFORMER BASE BOTTOM OF TRANSFORMER BASE BOLT CIRCLE: 10" TO 12" SHEET 1 OF 1 SHEET 1 OF 43.03

FOUNDATIONS

#4 STIRRUPS ANCHOR BOLT (TYP) BOLT CIRCLE #8 VERTICAL REINFORCING (V BARS) @ EQUAL SPACING CONDUIT AS REQUIRED PEDESTAL FOUNDATION - PLAN VIEW

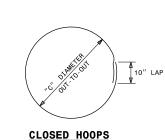
1/9" PREMOLDED EXPANSION JOINT FILLER -FINISHED GRADE

PEDESTAL FOUNDATION DETAILS FOR SIDEWALK



SECTION A-A

BREAKAWAY ANCHOR MEMBER (TYP) (SEE NOTE 8) CHAMFER 3"(TYP DIAMETER "A" TYPES I & II ONLY SECTION A-A

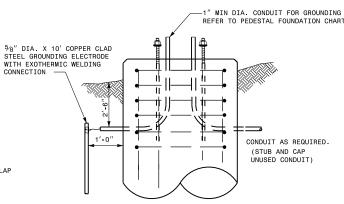


NOTES:

- 1. CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
- 2. COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
- 3. USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF F'c= 3000 PSI (MIN.).
- 4. USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING
- 5. GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
 - A. SANDY TYPE SOIL
 - B. NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
 - C. WIND SPEED NOT TO EXCEED 140 MPH

IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.

- 6. MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
- 7. ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
- 8. USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-41/2" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-65/8". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.



GROUNDING & CONDUIT DETAIL

	PEDESTAL FOUND	OITAC	N T	YPE /	AND S	SIZE			
			SIZE		ANCHOR	INSTALL			
TYPE	PEDESTAL DESCRIPTION	DIAMETER "A" FT	DEPTH "B" FT	CONCRETE VOLUME CY	DIAMETER (MIN.) IN	LENGTH FT-IN	GROUNDING SYSTEM (YES/NO)		
I	PEDESTRIAN PUSHBUTTON	2'-0"	3'-6"	.41	1/2	1'-6"	NO		
ΙΙ	NORMAL-DUTY	2'-0"	5'-0"	.58	3⁄4	2'-0"	YES		
III	HEAVY-DUTY	2'-6"	7'-0"	1.27	1	4'-0"	YES		

	REINFORCING STEEL SCHEDULE																
			V-BAR			STIRRUP											
						QI	JANTITY										
TYPE	SIZE #	QTY	LENGTH	WEIGHT LBS	SIZE #	VERTICAL ON 6" CENTERS	SPACING ON 12" CENTERS		LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	TOTAL STEEL WEIGHT LBS				
I	8	6	3'-0"	56	4	0	4	4	5'-7"	1'-6"	0'-10"	15	71				
ΙΙ	8	6	4'-6"	86	4	5	3	8	5'-7"	1'-6"	0'-10"	30	116				
III	8	6	6'-6"	122	4	7	4	11	7'-2"	2'-0"	0'-10"	53	175				

SHEET 1 OF

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STATE NORTH CAF

FOR

DRAWING

STANDARD

ENGLISH

PEDESTALS FOUNDATIONS

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C. 70 CABINET CABINET MODEL COMPONET **LAYOUT** WITH 2070L (BASEMOUNT) CONTROLLER

CONTROLLER

AND **CABINETS**

INPUT PANEL 0±0 0±0 0±0 0±0 0±0 0±0 ENGLISH 33333333333 STANDARD DRAWING FOR 0-0 333333333333 NOTE 332 CABINET PROVIDE 2" SPACE BETWEEN CONTROLLER AND ROLL OUT DRAWER TO ACCOMMODATE FIBER INTERCONNECT CENTER.

LEFT SIDE

REAR VIEW

DETECTOR TEST SWITCHES TYPE 2070L CONTROLLER FIBER INTERCONNECT CENTER ROLL OUT DRAWER INPUT FILE FIBER "I" MODEM INPUT FILE "J" POWER DISTRIBUTION "PDA" OUTPUT FILE AUX OUTPUT FILE (WHEN REQUIRED)

> 332 CABINET REAR VIEW

 \bigcirc \circ \bigcirc 000000 000000 RR PREEMPT & SIGN CONTROL ASSEMBLY (WHEN REQUIRED) 00000000000000000 GROUND BUS EQUIPMENT BUS SERVICE **TERMINALS**

> 332 CABINET RIGHT SIDE REAR VIEW

STANDARD DRAWING FOR **ENGLISH**

CONTROLLER (BASEMOUNT) CABINETS 2070L LAYOUT MITHAND 332 COMPONENT CONTROLLERS MODEL CABINET CABINET 70

NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

DEPT

SHEET 1 OF 2 1751

SHEET 1 OF 2

STATE OF NORTH CAROLINA
T. OF TRANSPORTATION
T. OF HIGHWAYS

70

CABINET

MODEL

336S

WITH

2070L

CONTROL

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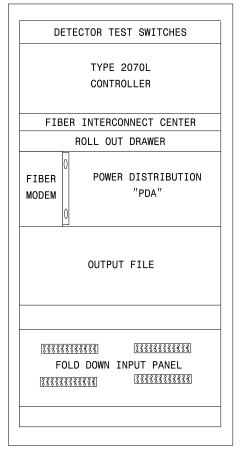
CABINET CONTROLLER COMPONENT AND LAYOUT

(POLE

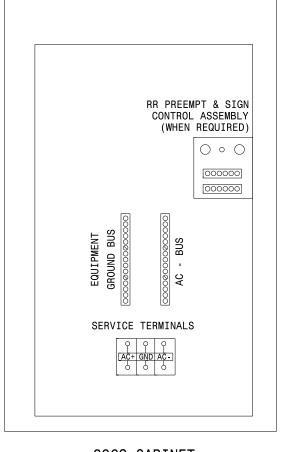
CABINETS MOUNT)

ENGLISH STANDARD DRAWING FOR DETECTOR TEST SWITCHES **TYPE 2070L** CONTROLLER FIBEROPTIC CHASSIS ROLL OUT DRAWER POWER DISTRIBUTION "PDA" **OUTPUT FILE** INPUT FILE "I"

> 336S CABINET FRONT VIEW



336S CABINET REAR VIEW



336S CABINET RIGHT SIDE REAR VIEW

NOTE

PROVIDE 2" SPACE BETWEEN CONTROLLER AND ROLL OUT DRAWER TO ACCOMMODATE FIBER INTERCONNECT CENTER.

SHEET 2 OF 2

1751.01

STANDARD DRAWING AND CONTROLLERS ENGLISH

CABINETS FOR

CONTROLLER MOUNT) (POLE 2070L **LAYOUT 336S WITH** COMPONENT MODEL CABINET CABINET 70

NORTH CAROLINA DEPT OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

DEPT

SHEET 2 OF 2 1751

DEPT. DIV] STATE OF
NORTH CAROLINA
T. OF TRANSPORTATION
IVISION OF HIGHWAYS
RAIEIGH, N.C. MERCURY CONTACTOR 30A MIN CONTROL BREAKER RFI Hg 0 AC+ **FILTER** 15A MIN AUXILARY BREAKER FAN POWER, ◆ ► AC+ TO LOAD SWITCH THERMOSTAT LAMPS - AC+ TO FLASHER CONTROLLER AND CA GROUND, AND AUXILIARY NEMA TS-2 ENGLISH POWER LINE SURGE PROTECTOR DOOR SWITCH STAGE 2 AC IN AC+ OUT GFI RECEPTACLE STANDARD STAGE 1 AC IN AC NEUTRAL OUT TO CONTROL EQUIPMENT NEUTRAL **NEUTRAL NEUTRAL NEUTRAL BUS** IN **GROUND** DRAWING CABINETS ARY POWER S LOGIC GROUND EARTH GROUND 0-GROUND BUS ► CABINET SHELL FOR LOGIC SYSTEMS **GROUND BUS** SHEET 1 OF 1 1751.02

1-12 STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

SYSTEMS CABINETS POWER STANDARD DRAWING AND AUXILIARY NEMA TS-2 AND LERS ENGLISH GROUND,

FOR

CONTROL

SHEET 1 OF 1

POWER